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BYUSHGENS, S. S.

Ob izgibanii poverkhnostey na glavnom osnovanii. M. (1917), 1-79.
Sur certaines familles invariables de courbes. Matem. SB, 32 (1925), 348-352.
Sur les surfaces de Bianchi. C.R. Acad. Sci., 203 (1936), 762-764.
Geomet lya vektornogo polya. DAN, 48 (1945), 163-166.
Geometriya vektornogo polya II DAN 48 (1945), 403- 404.
Geometriya vektornogo polya, Ser. Matem. 10 (1946), 73-96.

SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A.G.,
Markushevich, A.I.,
Rashevskiy, P.K.
Moscow-Leningrad, 1948

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Buschgueunnie, S. S. La géométrie d'un champ de vecteurs. C. R. (Doklady) Acad. Sci. URSS (N.S.) 48, 155–158 (1945). [MF 16662]

La note actuelle reprend l'étude des champs de vecteurs par la méthode du repère mobile de É. Cartan. Le repère (J_1, J_2, J_3) attaché à chaque point M du champ est constitué par trois vecteurs unitaires deux à deux orthogonaux, J_3 ayant la direction du vecteur issu de M. Son déplacement est défini par les formes de Pfaff ω_3° $(d\overrightarrow{M} = \omega_3^\circ J_3)$ et par les quantités p_3, q_3, r_3 qui définissent la rotation instantanée $\bar{\omega} = pJ_1 - qJ_2 + rJ_3$, $p = p_{33}\omega_3^\circ$, $q = \cdots$, $r = \cdots$.

L'auteur établit les relations entre les ω_3° et les p_3 donnant successivement: les trajectoires orthogonales du champ; la condition d'existence de surfaces orthogonales; les lignes de courbure (orthogonales aux plans $(J_3, \bar{\omega})$); la condition pour qu'une famille de surfaces orthogonales soit de Lamé; les lignes asymptotiques (dont les éléments dM sont situés dans les plans $(J_3, \bar{\omega})$ normalement à J_3, ou, ce qui revient au même, dont les binormales ont les directions des vecteurs J_3); les lignes géodésiques (dont les normales principales ont les directions des vecteurs J_3); les couples dM et δM bilatéralement conjugués (pour lesquels $\delta\overrightarrow{M}$ est orthogonal à J_3 et $J_3 + dJ_3$) et bilatéralement conjugués ($d\overrightarrow{M}$ et $\delta\overrightarrow{M}$, normaux à J_3, divisent alors harmoniquement les directions asymptotiques). Il donne enfin les expressions des courbures moyenne, Gaussienne et totale et signale ceux des éléments envisagés qui reprennent leur signification ordinaire lorsque le champ considéré admet une famille de surfaces orthogonales. En ce qui concerne les lignes de courbure et les lignes asymptotiques, il est indiqué qu'elles ne se divisent harmoniquement que dans le cas où l'un des deux systèmes de courbes est orthogonal. *P. Vincensini* (Besançon).

Source: Mathematical Reviews, Vol 6, No. 2

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(BYUSHGENS, S.S.)

Buscheguennce, S. S. La géométrie du champ de vecteurs. II. C. R. (Doklady) Acad. Sci. URSS (N.S.) 48, 379–381 (1945). [MR 16649]

L'auteur poursuit l'étude commencée dans la note précédente. La courbure totale du champ (rapport des volumes des parallélépipèdes construits sur J_3, J_3+dJ_3, $J_3+\delta J_3$ et J_3, ∂M, δM) s'annule identiquement si, en chaque point, la direction d'une ligne de courbure est orthogonale à celle d'une ligne asymptotique, les directions de la deuxième ligne de courbure et de la deuxième ligne asymptotique étant confondues.

L'indétermination des lignes de courbure exige que les courbes du champ soient les trajectoires orthogonales d'une famille de sphères (ou de plans). Celle des lignes asymptotiques, exige que la congruence des courbes du champ soit celle des hélices lignes intégrales d'un champ de moments ou celle des trajectoires orthogonales d'une famille de plans à un paramètre. [Ce résultat se trouve déjà dans un mémoire de R. Garnier, Bull. Soc. Math. France 48, 106–108 (1920); il a été repris, avec le minimum d'hypothèses, par D. Lacombe, Revue Sci. 83, 167–169 (1945); ces Rev. 8, 49; voir aussi la deuxième analyse ci-dessus.]

L'auteur introduit et caractérise les champs de rotation (dont les vecteurs coupent un axe fixe) et les champs de complexes spéciaux (dont les vecteurs sont dans un complexe spécial). Il indique que, pour qu'avec les courbes d'un champ on puisse former deux familles de surfaces orthogonales, il suffit que le champ de l'une des bissectrices des asymptotiques admette une famille de surfaces orthogonales. Puis, par la considération des différentes familles de repères ayant J_3 en commun, il introduit six invariants liés par une relation et donne la signification de chacun d'eux.

P. Vincensini (Besançon).

Source: Mathematical Reviews, Vol 8, No. 2

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BYUSHGENS, S.S.

Buschguennte, S. S. La géométrie du champ de vecteurs. Bull. Acad. Sci. URSS, Sér. Math. [Izvestia Akad. Nauk SSSR] 10, 73–96 (1946). (Russian. French summary) [The Russian spelling of the author's name is Byušgens.]

This paper presents, in the notation of Cartan, some of the geometry of vector congruentes in three-dimensional Euclidean space. Lines of curvature, geodesics and asymptotic lines with respect to such congruences, and some of their properties, are derived. This study invites comparison with older work, such as that of A. Dell'Acqua [Atti Ist. Veneto Sci. Lett. Arti (8) 2, 245–252 (1899)], and on nonholonomic manifolds [Vranceanu, Golab, and other writers after 1927]. *D. J. Struik* (Cambridge, Mass.).

Source: Mathematical Reviews, Vol 8, No. 2

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUSHGENS, Sergey Sergeyevich, 1882-

[Analytic geometry] Analiticheskaia geometriia. Izd. 4., perer. Moskva, Gos. izd-vo tekhn.-teoret. lit-ry, 1947. (MLRA 7:8)
(Geometry, Analytical)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUSHGENS, S. S.

Byušgens, S. S. The critical surface of an adiabatic flow. Doklady Akad. Nauk SSSR (N.S.) 58, 365–368 (1947). (Russian)

The equation of continuity of a stationary adiabatic flow is cast into the form $(v^{-1}-a^{-1})dA/ds-\operatorname{div} \mathbf{l}=0$, where $\mathbf{l}$ is the velocity vector, v the velocity, a the velocity of sound, s the arc length of a streamline, $a^2=dp/d\rho$, $A=a^2/(k-1)$; density ρ and pressure p are related by $p/p_0=(\rho/\rho_0)^k$. Moreover, Euler's equation gives $vdv/ds+dA/ds=0$. Surfaces for which $\operatorname{div} \mathbf{l}=0$ are called minimal or critical surfaces; if $\operatorname{div} \mathbf{l}$ is zero at all points the congruence $\mathbf{l}$ is called minimal. Certain geometrical properties of such congruences and surfaces are derived. For instance, all points where $v^2=a^2$, $dA/ds\neq\infty$, lie on minimal surfaces. A minimal surface is the locus of points where either the velocity is equal to the velocity of sound or both these quantities have extreme values when changing along appropriate stream lines. In a plane adiabatic flow the velocity of the current can reach the velocity of sound only in the points of inflection of the orthogonal trajectories of the stream lines. Finally, a necessary and sufficient condition that an adiabatic flow be critical ($v=a$) is that the congruence of stream lines be a special minimal congruence, that is, a minimal congruence whose curvature vectors $d\mathbf{l}/ds$ form a gradient field.

D. J. Struik (Cambridge, Mass.).

Source: Mathematical Reviews, Vol 9 No. 7

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUSHGENS, S. S.

Byushgens, S. S. The geometry of a stationary flow of an ideal incompressible fluid. Izvestiya Akad. Nauk SSSR. Ser. Mat. 12, 481–512 (1948). (Russian)

The flow under study is subjected to a conservative force (potential U). The method used is that of the mobile trihedron, analyzed in Cartan's ω-notation of Pfaffians:

$$d\bar{M}=\omega_\alpha{}^1 I_\alpha, \quad dI_k=\omega_k{}^\alpha I_\alpha, \quad \alpha, k=1, 2, 3,$$

where $\bar{M}$ is the radius vector and the I_α are three orthogonal unit vectors. The equation expressing $\operatorname{div}\bar{V}=0$ ($\bar{V}$, velocity vector) is:

$$(dV^1-V_r{}^2+V_q{}^3)\omega_0{}^2\omega_0{}^3+(dV^2-V_p{}^3+V_r{}^1)\omega_0{}^3\omega_0{}^1 + (dV^3-V_q{}^1+V_p{}^2)\omega_0{}^1\omega_0{}^2=0 \quad (p=\omega_2{}^3=-\omega_3{}^2, \text{ etc.}).$$

The vortex vector is $\bar{\omega}=\frac{1}{2}\operatorname{rot}\bar{V}=\frac{1}{2}\omega^\alpha I_\alpha$.

A number of conditions on these quantities and on the total energy $H=\frac{1}{2}V^2+U+p/\rho$ are geometrically interpreted. Examples are the equations $\operatorname{grad} H=2\bar{V}\times\bar{\omega}$, $(V\operatorname{grad})\bar{\omega}=(\bar{\omega}\operatorname{grad})\bar{V}$, the family of surfaces of constant total energy and the streamlines which are situated on them, also the case in which the magnitude of the velocity vector is constant. Other cases are that in which $H=f(z)$, hence the surfaces of total energy are parallel planes, and that of so-called minimal ($p_1=q_1$) and rectilinear congruences of stream lines.

The paper ends with a discussion of the spiral flow, that is, a flow for which at every point the direction of the vortex vector coincides with the direction of the velocity ($\bar{\omega}=k\bar{V}$). The type of theorem which is derived in this paper can be gathered from the following example [p. 504]. If the congruence of stream lines consists of straight lines, then it is either a minimal congruence or it is normal to a family of parallel surfaces, and in this second case the vortex lines are orthogonal to the stream lines. *D. J. Struik.*

Source: Mathematical Reviews, Vol 10, No.9

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BYUSHGENS, S. S.

Byushgens, S. S. "On a spiral current," Nauch. zapiski (Mosk. gidromeliorat. in-t im. Vil'yamsa), Vol. XVII, 1948, p. 71-90

SO: U-3264 10 April 53, (Letopis 'Zhurnal 'nykh Statey, No. 4, 1949).

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BYUSHGENS, S. S.

"Nomographic Manual," Moskva Izd. un-ta, 1951

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BYUSHGENS, S. S.

"Geometry of Adiabatic Flow," Uch. zap. Mosk. un., No.148, 1951

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BYUSHGENS, S. S.

Geometriia adiavaticheskogo potoka. (Moscow. Universitet. Uchenye zapiski, 1951. no. 148: Matematika, v. 4, p. 30-52, bibliography)

Title tr: Geometry of adiabatic flow.

Reviewed by D. J. Struik in Mathematical Reviews, 1953, v. 14, no. 3, p. 328-329.

Q60.M868 1951, no. 148

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

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510-MGLN3 575

Brušgens, S. S. On stream lines. Doklady Akad. Nauk SSSR (N.S.) 78, 837–840 (1951). (Russian)

The author continues his earlier work [Izvestiya Akad. Nauk. SSSR. Ser. Mat. 10, 73–96 (1946); 12, 481–512 (1948); these Rev. 8, 90; 10, 633]. In the notation of this article (with J instead of I), $\delta=\omega_0^1\omega_0^2\omega_0^3\neq 0$, $p=p_\alpha\omega_0^\alpha$, $q=q_\alpha\omega_0^\alpha$, $r=r_\alpha\omega_0^\alpha$, he defines the field of vectors "adjoint" to the field J_3:

$$J=\frac{dJ_3}{ds}-(\operatorname{div} J_3)J_3=q_3J_1-p_3J_2+(p_3-q_1)J_3.$$

When J is normal to a family of surfaces, J_3 is called semi-special; when J is a gradient, J_3 is called special. It is proved (a) that the congruence of stream lines is semi-special, and (b) that $(d\ln V)\omega_0^1\omega_0^2=(p_3-q_3)\delta$; these two conditions are necessary and sufficient for stream lines. It is also shown that a congruence of parallel helices on parallel cylinders is semi-special and minimal. *D. J. Struik* (Cambridge, Mass.).

Source: Mathematical Reviews, Vol 13 No. 3

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USSR/Mathematics - Tensor 11 Jun 52

"Flow Lines. II," S. S. Byushgens, Sci Res Inst of Math, Moscow State U imeni Lomonosov

"Dok Ak Nauk SSSR" Vol LXXXIV, No 5, pp 861-863

In the previous article ("Dok Ak Nauk SSSR" Vol LXXVIII, No 5, 1951) the author attempted to establish the characteristic geometric properties of congruence of flow lines of the stationary flow of an ideal incompressible fluid. However, only one of the conditions obtained by him contained geometric elements of congruence, which was not able to permit him to exclude kinematic elements.

223T68

He shows here that by way of a small variation in applied method one can obtain both conditions in purely geometrical form. Submitted by Acad A. N. Kolmogorov 10 Apr 52.

223T68

BYUSHGENS, S. S.

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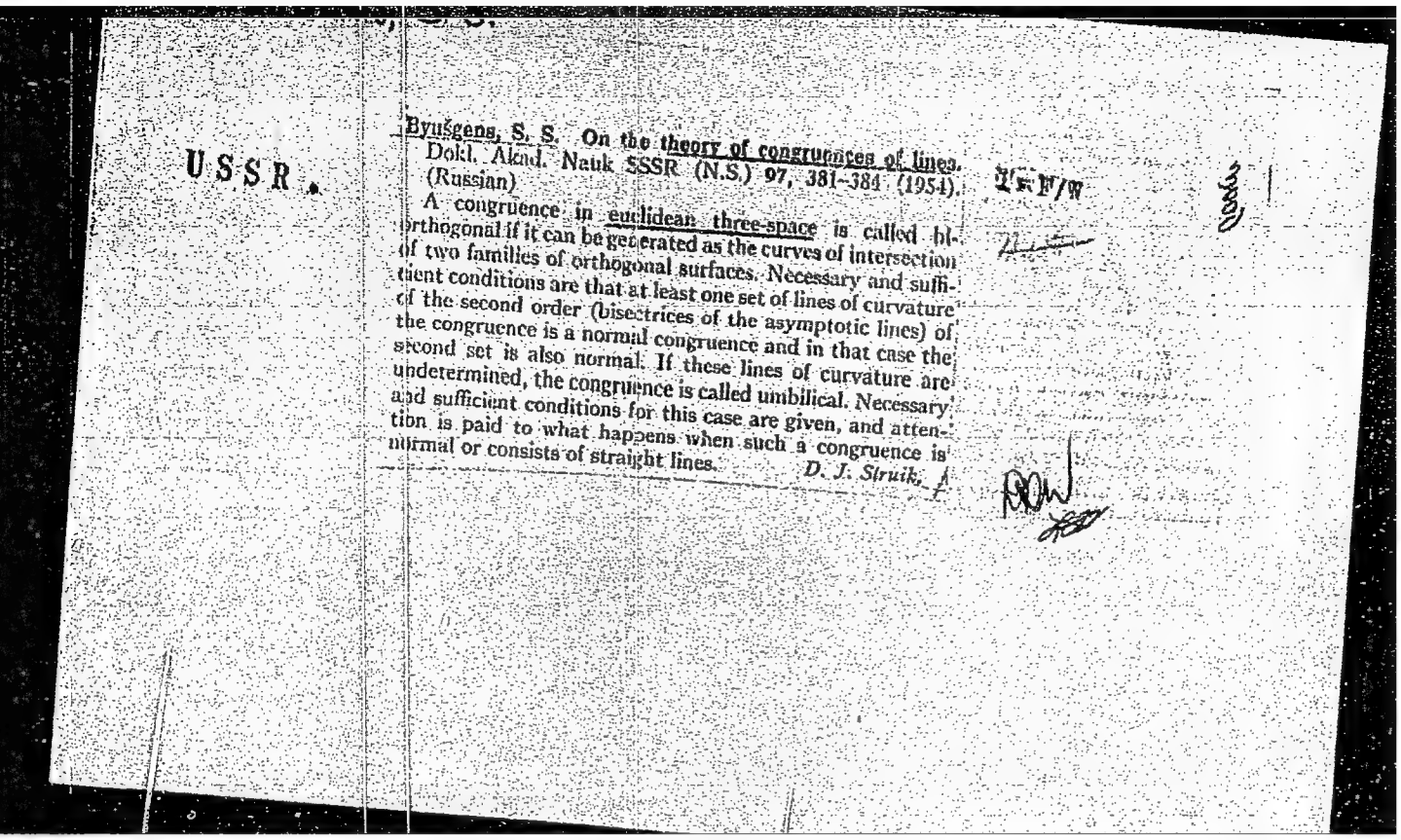

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Byušgens, S. S. On the theory of congruences of lines. Dokl. Akad. Nauk SSSR (N.S.) 97, 381–384 (1954). (Russian)

A congruence in euclidean three-space is called bi-orthogonal if it can be generated as the curves of intersection of two families of orthogonal surfaces. Necessary and sufficient conditions are that at least one set of lines of curvature of the second order (bisectrices of the asymptotic lines) of the congruence is a normal congruence and in that case the second set is also normal. If these lines of curvature are undetermined, the congruence is called umbilical. Necessary and sufficient conditions for this case are given, and attention is paid to what happens when such a congruence is normal or consists of straight lines.

D. J. Struik.

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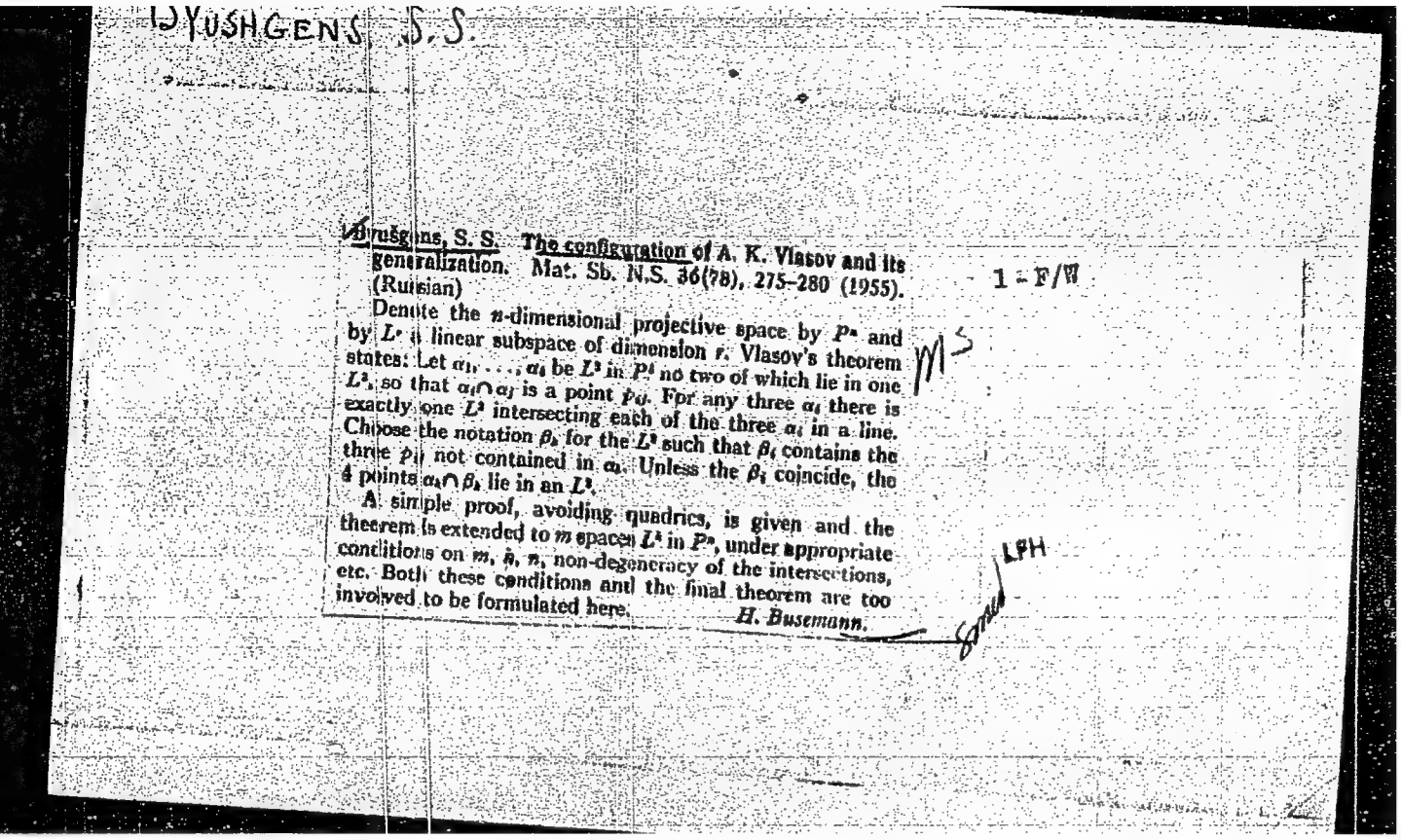

IJYUSHGENS, S. S.

Brušgins, S. S. The configuration of A. K. Vlasov and its generalization. Mat. Sb. N.S. 36(78), 275–280 (1955). (Russian)

Denote the n-dimensional projective space by P^n and by L^r a linear subspace of dimension r. Vlasov's theorem states: Let $\alpha_1, \ldots, \alpha_6$ be L^3 in P^4 no two of which lie in one L^3, so that $\alpha_i \cap \alpha_j$ is a point p_{ij}. For any three α_i there is exactly one L^3 intersecting each of the three α_i in a line. Choose the notation β_k for the L^3 such that β_i contains the three p_{ij} not contained in α_k. Unless the β_i coincide, the 4 points $\alpha_i \cap \beta_k$ lie in an L^3.

A simple proof, avoiding quadrics, is given and the theorem is extended to m spaces L^3 in P^n, under appropriate conditions on m, n, non-degeneracy of the intersections, etc. Both these conditions and the final theorem are too involved to be formulated here.

H. Busemann.

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BYUSHGENS, S. S.

Transactions of the Third All-union Mathematical Congress (Cont.) Moscow, Jun-Jul '56, Trudy '56, V. 1, Sect. Rpts., Izdatel'stvo AN SSSR, Moscow, 1956, 237 pp. Call Nr: AF 1108825

Berezman, A. M. (Kemerovo). Laplace Transformation in T5 Applied to Transformation Fibered Congruence Pairs. 140-141

Mention is made of Finikov, S. P.

Blank, Ya. P. (Khar'kov). On Congruences W. 141

Borisov, Yu. F. (Leningrad). Parallel Shaft of Vector and the Curves on Irregular Smooth Surfaces. 141-142

Mention is made of Aleksandrov, A. D.

Borisov, Yu. F. (Leningrad). Geometry of Semineighborhood in Two-dimensional Manifolds of Bounded Curvatures. 142-143

Byushgene, S. S. (Moscow). Congruence Lines on the Family of Surfaces. 143-144

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AUTHOR: Byushgens, S.S.

TITLE: The Geometry of the Instationary Flow of a Perfect Incompressible Fluid

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya matematicheskaya, 1960, Vol. 24, No. 2, pp. 171-202

TEXT: After having reduced the geometric structure of a stationary flow in (Ref. 2) by consideration in a movable tripod and application of the differential geometric methods of Cartan to a purely geometric investigation, the author now extends this method to instationary flows. The hydrodynamic equations of motion are referred to a tripod depending on time. The author introduces the notion of the eddy-current plane of a point of the flow region (it contains the direction of velocity as well as the direction of the eddy in the considered point). The author gives examples of instationary flows for which in every moment the eddy-current planes of every point envelop certain surfaces: the eddy-current surfaces.
N.I. Alekseyev and B.K. Uladziyevskiy are mentioned in the paper. There are 7 references : 4 Soviet, 2 American and 1 Roumanian.
PRESENTED: by P.S. Aleksandrov, Academician
SUBMITTED: January 19, 1959
Card 1/1

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

B'YUSHKOV, B. P.

USSR/Prehistoric animals

Card 1/1 : Pub. 86 - 24/36

Authors : B'yushkov, B. P.

Title : Belonochasma aenigmaticum, a mysterious animal from the shale deposits in Bavaria

Periodical : Priroda 43/8, 114-115, Aug 1954

Abstract : A brief description is given of a region in Bavaria which abounds in prehistoric remains. An account is given of the finding of a rare specimen of vertebrate which cannot be classed, although possessing a masticating mechanism that is somewhat similar to that of a reptile. Illustration.

Institution : ...

Submitted : ...

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

ARIYEL', N.Z.; BYUTNER, E.K.; KONSTANTINOV, A.R.

Methods and results of the spectral characteristics of turbulent pulsations in the lowest layer of the atmosphere. Trudy GGO no.144:59-67 '63. (MIRA 17:6)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

[redacted]

[redacted], D.I.; BYUTNER, E.K.

Turbulence in jet streams in the presence of a geostrophic wind shift. Trudy GGO no.150:63-68 '64. [redacted]

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

ARIGLI, N.[illegible]; BYUTNER, E.K.; PANIN, B.D.

Determining the v-components of wind velocity from structural measurements. Trudy GGO no.150:69-77 '64. (MIRA 17:7)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUTNER, E.K.

Dependence of the extent of the dispersion of particles emitted by a constant source on the time interval of the experiment. Trudy GGO no.150:78-84 '64. (MIR 17:7)

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L 5022-66 EWT(1)/FCC GW
ACC NR: AT5024882 SOURCE CODE: UR/2531/65/000/171/0032/0037

AUTHORS: Laykhtman, D. L.; Byutner, E. K. 44,55 44,55

ORG: Main Geophysical Observatory, Leningrad (Glavnaya geofizicheskaya observatoriya) 44,55

35
B+1

TITLE: Basic criteria defining the intensity of turbulence in a mountain region

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 171, 1965. Rezul'taty issledovaniya atmosfernoy turbulentnosti na vertoletnykh trassakh (Results of the investigation of atmospheric turbulence on helicopter routes), 32-37

TOPIC TAGS: wind, atmosphere, atmospheric turbulence, mountain atmospherics, meteorology 12,44,55

ABSTRACT: An effort is made to compute the characteristics of air currents in mountainous regions. The study avoids the use of an oversimplified terrain model such as one in which a mountain ridge is treated as a single obstacle of one form or another. The authors take the approach that the complex structure of an air

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stream in a mountainous area may be represented as a certain smoothed motion U upon which are superimposed macroscalar pulsations U'. These pulsations are the result of the current break up upon incidence with the mountain ridge. Hence, the mountains are visualized as a lattice wherein the basic generation of turbulence energy occurs in a layer ranging from a certain mean height to the mountain summits. Above this layer the inflow of energy of turbulence is caused by diffusion from below. This pulsation-diffusion concept is depicted in Fig. 1. The

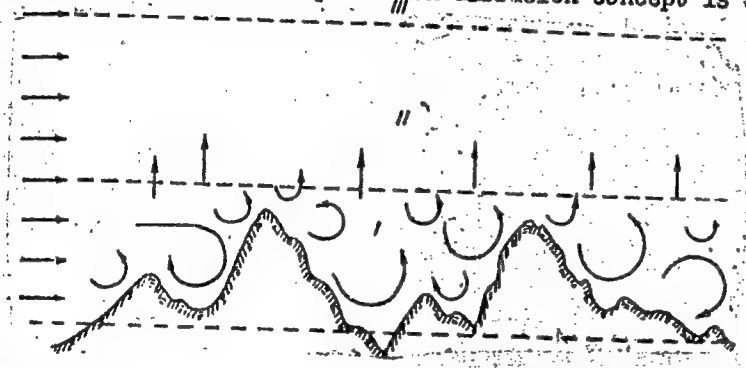

Fig. 1. I- the layer in which the basic pulsation energy originates. II- the layer in which turbulence energy diffuses from below; III- free atmosphere

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process is best quantified by a judicious analysis of properly selected parameters. It is desired to establish the physical dependency of the mean square wind gust U'^2 upon physical quantities which may be readily evaluated. A discussion of the necessary parameters is given and U'^2 is written as a function of six dimensioned parameters.

$$\overline{u'^2} = \Phi\left(L_z; U; z; \omega_z; \frac{g}{T}; \frac{R}{\rho c_p}\right),$$

where L(z) is the vertical dimension parameter given by

$$L_z = \sqrt{\overline{[h(x, y) - \bar{h}]^2}},$$

where h(x,y) is the height of a relief point above sea level and $\bar{h}$ is the mean height of the mountain region above sea level. The variable z is the height measured from $\bar{h}$, ω_z is the Coriolis parameter, and $R/\rho c_p$ is the radiation balance and thermal nonuniformity parameter. The functional equation is transformed through considerations of nondistinct stratification and thermal convection. Wind gust data from the May, 1962, expedition of GGO, NIIGVF, MGU, and TsAO in Crimea are compared in a correlation analysis. The authors claim only that the results of the correlation do not contradict the validity of the model. Orig. art. has: 2 figures, 5 equations, and 1 table.

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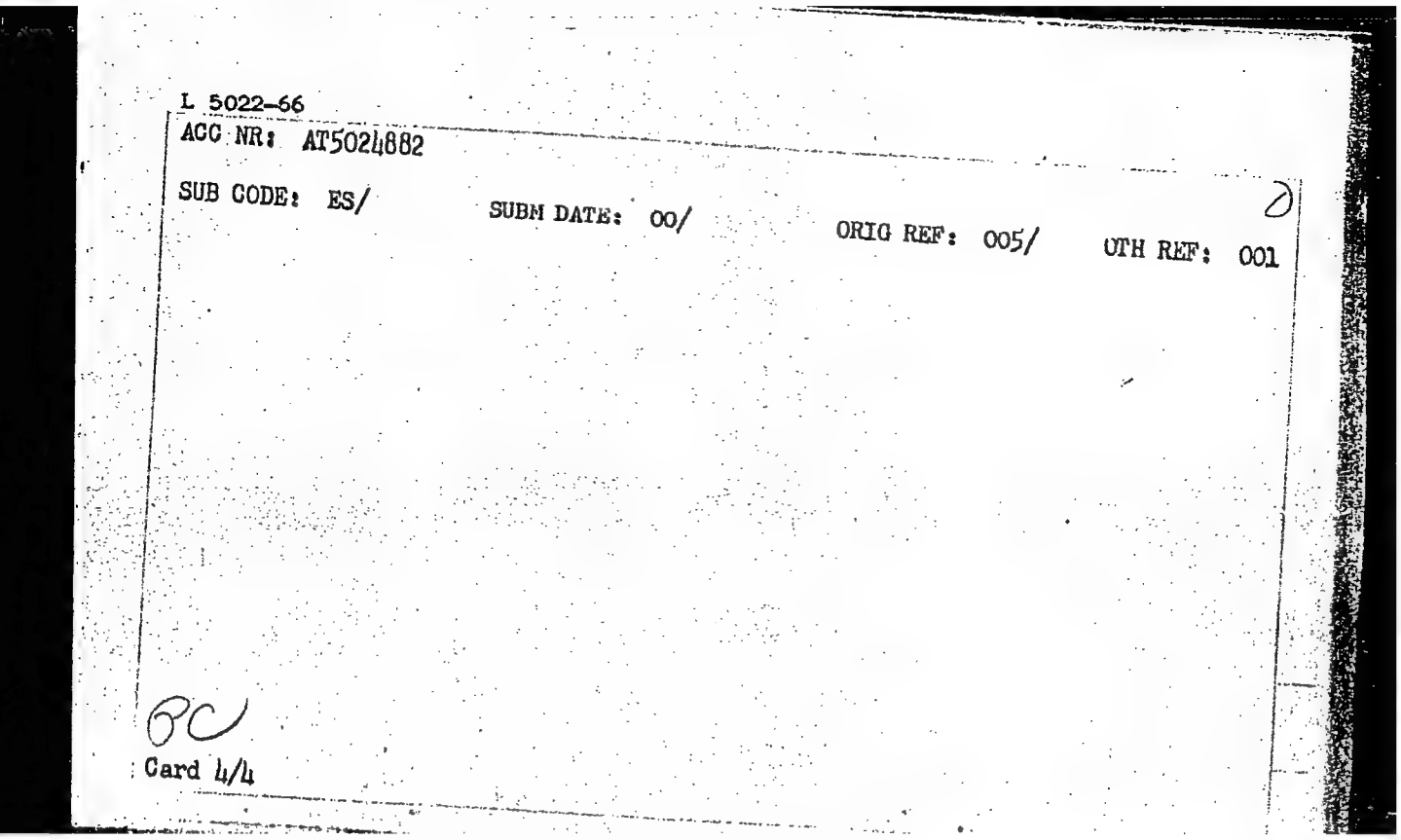

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ACC NR: AP7[illegible]05 SOURCE CODE: UR/0362/66/002/009/0993/0996

AUTHOR: Ariel', N. Z.; Byutner, E. K.

ORG: Main Geophysical Observatory (Glavnaya geofizicheskaya observatoriya)

TITLE: Relationship between Lagrangian correlation and maxima of euler space-time correlation functions for surface layer of the atmosphere

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 2, no. 9, 1966, 993-996

TOPIC TAGS: Lagrange equation, surface boundary layer, correlation function, atmospheric diffusion

SUB CODE: 04,12

ABSTRACT: This paper presents an evaluation of the decrease of the maxima of space-time correlation functions with an increase of time on the assumption of an absence of individual changes in moving volumes. It was found that the decrease of the maxima observed in the experiments in the surface layer of the atmosphere (the decrease of the height of the maximum occurs for two reasons -- due to the presence of individual changes in volumes during the time of their movement between two points; fluctuations of the value and direction of the vector U of current velocity) is substantially greater than computed with the above-mentioned assumption. Accordingly, the

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ACC NR: AP7010705

principal role in this effect is played by individual changes. Orig. art. has: 2 figures and 6 formulas. [JPRS: 40,291]

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APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUTNER, E. K.

USSR/Nuclear Physics - Optics, Molecular Oct 51

"Optically Active Molecules in External Field," M. V. Volkenshteyn, E. K. Byutner, Leningrad State U

"Zhur Eksper i Teoret Fiz" Vol XXI, No 10, pp 1132-1138

Discusses behavior of optically active gas or soln in external field taking into account elec dipole and quadripole and magnetic dipole of polarizing medium (cf. M. V. Volkenshteyn, ibed. 20, 342, 1950, and "Molecular Optics" 1951). Authors acknowledge A. T. Timorev's advice. Submitted 22 Nov 50.

PA 197T96

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUTNER, E. K.

178T107

USSR/Physics - Crystallography 1 Feb 51

"Optically Active Crystals," M. V. Volkenshteyn, E. K. Byutner, Leningrad State U imeni A. A. Zhdanov.

"Dok Ak Nauk SSSR" Vol LXXVI, No 4, pp 515-517

Only accurate theory of rotating crystals is that of Born. Exptl data on relation between crystallic spectrum and rotating capacity were found by Samoylov, studying uranyl acetate at temp of liquid helium. Submitted 20 Nov 50 by Acad S. I. Vavilov.

178T107

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

FA 236T85

USSR/Physics - Dichroism

Nov 52

"Circular Dichroism in Crystals," M. V. Vol'kenshteyn and E. K. Byutner, Leningrad State Univ

"Zhur Eksper i Teoret Fiz" Vol 23, No 5, pp 584-587

It is shown by means of a classicial model of a system of coupled oscillators with helical symmetry that crystals in the plane of polarization may possess a strong circular dichroism. Received 13 May 52.

236T85

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

Byutner, E.K.

USSR/ Physics

Card 1/1 Pub. 22 - 14/63

Authors : Gotlib, Yu. Ya.; Vol'kenshteyn, M.B.; and Byutner, E.K.

Title : Anisotropy of the Polarizability of chain molecules

Periodical : Dok. AN SSSR 99/6, 935-938, Dec 21, 1954

Abstract : An analytical derivation of the polarizability of a chain molecule containing a number of equal links characterized by a symmetrical voltage of the inner rotation ($V(\varphi)=V(-\varphi)$), is presented. The matrix and tensor method was used for the computations. Five references; 3-USSR (1942-1953). Table.

Institutions: The Leningrad State Pedagogical Institue im. A.I. Gertsen; The Institute of the High Molecular Compounds of the Acad. of Scs. of the USSR

Presented by: Academician A.F. Ioffe, September 18, 1954

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

3(1) SOV/33-35-4-6/25

AUTHOR: Byutner, E.K.

TITLE: The Dissipation of Gas From Planetary Atmospheres I. The Dissipation of an Isothermal Ideal Gas in the Central Field of Gravitation (Dissipatsiya gaza iz atmosfer planet. I. K voprosu o dissipatsii izotermicheskogo ideal'nogo gaza v tsentral'nom pole tyagoteniya)

PERIODICAL: Astronomicheskiy zhurnal, 1958, Vol 35, Nr 4, pp 572-582(USSR)

ABSTRACT: The present investigation is based on the Lennard-Jones method [Ref 3] for the calcualtion of the rate of dissipation from planetary atmospheres. The author gives an expression for the rate of dissipation of particles from each layer of an ideal gas in a central field. He considers the deviation of the velocity distribution from the equilibrium Maxwell distribution. The number of particles which acquire by collisions, velocities larger than the critical velocity of escape v_{cr} is determined. The rate of dissipation is less than the rate of dissipation of the gas is in the state of equilibrium; the factor is 0.27 if v_{cr} has the double value of the mean velocity of thermal motion. The difference of the two rates

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of dissipation decreases rapidly, if the ratio of v_{cr} to the thermal velocity increases. The author particularly refers to the papers of V.A.Krat [Ref 5] and S.B.Pikel'ner [Ref 6]. He thanks Professor V.A.Krat for suggestions.
There are 4 figures, 2 tables, and 7 references, 2 of which are Soviet, 3 English, 1 American, and 1 German.

ASSOCIATION: Leningradskiy gosudarstvennyy pedagogicheskiy institut (Leningrad State Pedagogical Institute)

SUBMITTED: April 17, 1957

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUTNER, E. K., Candidate Phys-Math Sci (diss) -- "The dissipation of gases from the atmospheres of planets". Leningrad, 1959. 10 pp (Min Higher Educ USSR, Leningrad Pedagogical Inst im A. I. Gertsen, Chair of Theoretical Phys), 150 copies (KL, No 24, 1959, 124)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

3(1)

AUTHOR: Byutner,E.K.

SOV/33-36-1-11/31

TITLE: The Dissipation of Gas From Planetary Atmospheres. II. The Total Velocity of Dissipation of Gas From a Planetary Atmosphere. The Problem of Terrestrial Helium

PERIODICAL: Astronomicheskiy zhurnal, 1959,Vol 36,Nr 1,pp 89-99 (USSR)

ABSTRACT: The author gives a general expression for the velocity of gas dissipation from a planetary atmosphere. For two cases he calculated the velocity of gas dissipation and the thickness and position of the layer from which the dissipating process is most effective: a) a single component atmosphere, b) an atmosphere composed of a heavy gas with a small admixture of a light gas. Under equal conditions in the case b) the thickness of the layer is less than in the case a). The thickness of the layer always increases with an increasing kinetic energy of the gas. Furthermore the distribution of the intensity of dissipation along the effective layer and the position of the layer of maximum intensity are determined. Finally the possibility of dissipation

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The Dissipation of Gas From Planetary Atmospheres. II. The Total Velocity of Dissipation of Gas From a Planetary Atmosphere. The Problem of Terrestrial Helium SOV/33-36-1-11/31

of helium from the earth's atmosphere is discussed.
The author thanks Professor V.A.Krat for advice.
There are 4 figures, 1 table, and 23 references, 6 of which are Soviet, 9 American, 3 English, 4 French, and 1 German.

ASSOCIATION: Leningradskiy gosudarstvennyy pedagogicheskiy institut imeni A.I.Gertsena (Leningrad State Pedagogical Institute imeni A.I. Gertsen)

SUBMITTED: November 29, 1957

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

3(1)

AUTHOR: Byutner, E. K. SOV/20-124-1-14/69

TITLE: On the Dissipation of Hydrogen From the Atmospheres of Planets (O dissipatsii vodoroda iz atmosfer planet)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 1, pp 53-56 (USSR)

ABSTRACT: A. B. Meinel (Ref 1) discovered hydroxyl bands in the luminescence spectrum of the nocturnal sky, and this indicates a dissociation of the water vapors in the upper strata of the earth's atmosphere. The present paper investigates the problem concerning the quantity of water lost by a planet. The altitude of the stratum in which photo-dissociation of water takes place and the average number of H_2O molecules decomposing in the time unit can easily be estimated from the data at present available. The total probability of the photo decay of a H_2O molecule on the boundary of the earth's atmosphere amounts to $2.5 \cdot 10^{-6}$ sec^{-1}. The photo decay of water occurs mainly in the layer of between 70 and 80 km altitude under the action of a radiation of 1860 to 1760 Å. However, photodissociation does not disturb the uniform distribution of H_2O particles with respect to altitude. A formula is then derived for the dissipation F of atomic hydrogen.

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On the Dissipation of Hydrogen From the Atmospheres of Planets

From the layer in which dissociation of water occurs, a diffusion flux of atomic hydrogen is directed upwards. It essentially influences the distribution of atomic hydrogen with respect to altitude. A formula is written down for the amount of this diffusion flux. For the rate of dissipation of the hydrogen of the earth $F \sim 10^9$ $cm^{-2} sec^{-1}$ is found. If such a steady flux has been lasting already for 4.10^9 years, hydrogen of $6.5.10^{25}$ molecules of water has already evaporated into space, which corresponds to about 1 % of the quantity of water existing on the earth. The author thanks Professor V. A. Krat for his valuable advice.-There are 23 references, 8 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy pedagogicheskiy institut im. A. I. Gertsena (Leningrad State Pedagogical Institute imeni A. I. Gertsen)

PRESENTED: August 8, 1958, by V. G. Fesenkov, Academician

SUBMITTED: May 30, 1958

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

S/020/61/138/005/007/025
B104/B205

AUTHOR: Byutner, E. K.

TITLE: Time of attainment of a steady amount of oxygen in planetary atmospheres containing water vapor

PERIODICAL: Akademiya nauk SSSR, Doklady, v. 138, no. 5, 1961, 1050-1053

TEXT: In a previous paper, the author calculated the amount of hydrogen vapor decomposing in the terrestrial atmosphere at an altitude of 70-80 km under the action of solar radiation (DAN, 124, 53 (1959)). At present, the content of O_2 in the terrestrial atmosphere is so high that the amount of O_2 produced by photodisintegration of water and the amount lost due to oxidation on the earth's surface are in equilibrium. It is, however, clear that the liberation and absorption of oxygen in the biosphere exceed the two above-mentioned processes appreciably. In this connection, the question arises of whether the accumulation of a noticeable amount of oxygen in the terrestrial atmosphere as a result of photodisintegration of H_2O was

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possible prior to the evolution of organic life. The present paper is devoted to this problem. The author estimates the period of time required for the accumulation of a given quantity of oxygen in the Earth's atmosphere as a result of photodisintegration of H_2O, taking oxidation on the Earth's surface into account. The author makes use of recent data concerning the spectral composition of solar radiation, and assumes that at an altitude of 15-80 km, the atmosphere is completely intermixed, and the content of water vapor accounts for $2 \cdot 10^{-5}$% of the total amount of gas per unit volume. The altitude of 15 km is taken as z = 0. The number of H_2O photodisintegrations occurring in a planetary atmosphere free from oxygen but containing water vapor, in which the protective effect of free oxygen is absent, is given by $\int_0^\infty I(z)n_1(z)\sigma_1 dz = I_0\int_0^\infty n_1(z)\sigma_1 e^{-\sigma_1 n_1(z)H}dz \approx I_0$ (1), where I_0 is the intensity of radiation incident in the range of 1860-1430 A, expressed in photons per cm^2 and per sec. At a distance of $150 \cdot 10^6$ km

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from the Sun, one has $I_o = 10^{12}$ cm^{-2}sec^{-1}. The quantity of O_2 produced in the atmosphere under these conditions amounts to $5 \cdot 10^{11}$ cm^{-2}sec^{-1}. On account of the accumulation of O_2 in the atmosphere of the Earth, the production of O_2 is slowed down, while the altitude of the layer where photodisintegration is strongest is increased. The intensity of radiation penetrating down to an altitude z is given by $I(z) = I_o \exp(-\sigma_1 n_1(z) + \sigma_2 n_2(z,\tau) H)$, where $n_1(z)$ indicates the concentration of water particles, and n_2 that of free oxygen; τ is calculated from the instant at which n_2 was zero. It is shown that the spectral range of 1760-1430 A loses the role played by it in the photodissociation of H_2O within a comparatively short time during which the concentration of O_2 reaches that of H_2O. The rate of oxidation on the Earth's surface is given as $V = Ae^2 n_{20}(\tau)$, where A is a constant determined by the condition of the Earth's surface. The results of calculation are compiled in Table 1 for two different values of A. The value of

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Time of attainment of a ...

$A = 3.3 \cdot 10^{-10}$ was calculated by G. E. Hutchinson (The Solar System, 2, Chicago, 1954, p. 396). The conclusion is drawn that the amount of O_2 now present in the atmosphere has accumulated within a period of about 60 million years, as a result of interaction of atmospheric water vapor with solar radiation, provided no appreciable absorption of O_2 has taken place. This is a very short period compared to the age of a planet. The evolution of life is thus believed to have begun in an atmosphere containing oxygen. In the concluding part, it is shown that the number of photodisintegrations in the atmosphere is much smaller than that of H_2O photodisintegrations.

There are 1 table and 6 references: 2 Soviet-bloc and 4 non-Soviet-bloc.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya im. A. I. Voyeykova (Main Geophysical Observatory imeni A. I. Voyeykov)

PRESENTED: February 17, 1961, by V. G. Fesenkov, Academician

SUBMITTED: November 19, 1960

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S/531/62/000/127/006/007
I053/I253

3.5140

AUTHORS: Laykhtman, D.L., Byutner, E.K.

TITLE: The problem of turbulence in the free atmosphere

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy. no. 127. 1962. Fizika prizemnogo sloya vozdukha, 122-126

TEXT: A total expression is obtained for the wind speed in a jet stream in terms of an arbitrary law concerning the change of the horizontal pressure gradient with altitude - z. The vertical profiles of the wind and its degree of gustiness when $f(z) = b(z)$ and the special case of the presence of a strong leap in horizontal gradient of pressure over a narrow interval of altitudes when $u_g(z) = b(z)$, are calculated. According to the formulae obtained, the values of the coefficient of turbulence k and of wind gustiness σ^1, typical of the jet stream, were found to be $k = 500 \approx m^2/sec$ and $\sigma_{max} \approx 1 m/sec$.

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

CHERNOV, L. A.

Sovremennyye problemy issledovaniya zvezd; sbornik statey (Contemporary Problems in Star Scintillation) Moscow, Izd-vo AN SSSR, 1959. Errata slip inserted. 1,000 copies printed.

Editorial Board: A. M. Obukhov, Corresponding Member, Academy of Sciences USSR; Resp. Ed.: G. A. Ne'man, Professor I. G. Kolchinskiy, Candidate of Physical and Mathematical Sciences; N. I. Kuznetsov, Candidate of Physical and Mathematical Sciences; V. V. Protsenko, Candidate of Physical and Mathematical Sciences; M. A. Shilintsova and L. N. Zhukova; Tech. Ed.: M. N. Zvonkova.

PURPOSE: This book is intended for astronomers. It may be of interest to physicists studying the atmosphere and designers of astronomical equipment.

COVERAGE: The book reports on the Transactions of the Conference on the Study of Stellar Scintillation, held in Moscow from 18 to 23 June 1958. The Conference was organized by the Astronomical Council AS USSR and the Institute of Physics of the Atmosphere AS USSR. The book contains summaries of 23 reports read at the Conference, treating stellar scintillation and flickering of star images. Individual reports deal with methods and instruments of observation. Included are brief comments of the discussions which followed each session, and the resolution adopted by the Conference. References follow individual articles.

Brekhovskikh, L. M., A. S. Gurvich, V. I. Tatarskiy, and L. R. Tsvang (Institute of Physics of the Atmosphere AS USSR). Instruments for the Statistical Analysis of Turbulence 85

Gurvich, A. S., V. I. Tatarskiy, and L. R. Tsvang. [Institute of Physics of the Atmosphere AS USSR]. Scintillation of Terrestrial Sources of Light 33

Chernov, L. A., and M. F. Kvon. [Yaroslavl University pedagogicheskiy institut imeni K. D. Ushinskogo - Yaroslavl' State Pedagogical Institute imeni K. D. Ushinskiy]. Relationship Between the Diffractional Image in the Lens and the Magnitude of Incident Wave Fluctuation 47

Discussions:

Shishmonova, E. A. (Yaroslavl' State Pedagogical Institute imeni K. D. Ushinskiy). The Effect of Diaphragm Size on the Mean Square Frequency of Field Fulsation at the Lens Focus 55

Tatarskiy, V. I. Some Remarks Concerning the Report of L. A. Chernov and M. F. Kvon and the Mirrors of E. A. Hyshman 57

Kvon, M. F. 60

Obukhov, A. M. 61

Ne'man, G. A. 61

REMOTE SESSION, June 19th

Reports:

Ne'man, G. A., I. G. Kolchinskiy, and N. I. Kuznetsov. Scintillation and Flickering of Star Images. Astrolimits. (Review of Scientific Works) 63

Obukhov, I. K. (Glavnaya astronomicheskaya observatoriya AS USSR - Main Astronomical Observatory AS USSR). Observations of Stellar Scintillation Made at Pulkovo With the AST-5 Telescope 115

Dunaikova, A. K. (Main Astronomical Observatory AS USSR). Observations of Stellar Scintillation Made at Pulkovo With the AST-7 Telescope 129

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

CHERNOV, L.A.

"Acoustics of Moving Medium."

report presented at the 3rd International Congress on Acoustics, Stuttgart, September 1-8,'59.
Akustiches Institut, Adademie der Wissenschaften, Moskau, UdSSR.

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

SOV/46-5-1-3/24

AUTHORS: Blyakhman, E.A. and Chernov, L.A.

TITLE: Dependence of the Frequency of Field Pulsations at the Focus of a Lens on Diaphragm Dimensions (Zavisimost' chastoty pul'satsiy polya v fokuse linzy ot razmerov diafragmy)

PERIODICAL: Akusticheskiy Zhurnal, 1959, Vol 5, Nr 1, pp 21-24 (USSR)

ABSTRACT: The authors calculated the root-mean-square value of the frequency of pulsations of a wave which passed through a medium with random inhomogeneities. The case of random motion of these inhomogeneities is dealt with in the present paper. Dependence of the root-mean-square frequency of pulsations at the focus of a lens on the lens-diaphragm aperture was found (figure on p 24) to be the same for random and for ordered motions of the inhomogeneities causing the pulsations; the case of ordered motion of the inhomogeneities was discussed earlier by Blyakhman (Ref 1). This dependence agrees well with the experimental data (dots and crosses in the figure on p 24) obtained by

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Dependence of the Frequency of Field Pulsations at the Focus of a Lens on Diaphragm Dimensions

Nettelblad (Ref 3) in observation of the scintillation of stars. There is 1 figure and 3 references, 2 of which are Soviet and 1 Swedish.

ASSOCIATION: Yaroslavskiy gosudarstvennyy pedagogicheskiy institut im. K.D. Ushinskogo (Yaroslavl' State Pedagogical Institute imeni K.D. Ushinskiy)

SUBMITTED: June 20, 1958

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

CHERNOV, L.A.

Nikolai Nikolaevich Andreev; on his 80th birthday. Usp. fiz.nauk 71 no.3:525-528 Jl '60. (MIRA 13:7)
(Andreev, Nikolai Nikolaevich, 1880-)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

CHERNOV, L. A., LEYPUNSKIY, A. I., KUZENTSOV, V. A., ARTYKHOV, G. Y.,
MOGILNER, A. I., PROKHOROV, Y. A., STEKLOVSKIY, V. M.

"Eperimental studies of some of the physical features of
Beryllium-moderated in termedate reactors."

Report submitted for the IAEA Seminar on the Physics of East and Intermediate Reactors, Vienna, 3-11 Aug 1961

Acad. Sci. USSR Moscow

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

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3

CHERNOV, L. A., BLYAKHMAN, Ye. A., and KROM, M. N.

"The focal system influence over statistical characteristics of waved propagagated through the medium with random inhomogeneties"

report submitted for the 4th Intl. Congress of Acoustics, Copenhagen, Denmark, 21-28 Aug 1962.

Acoustical Inst. of the Academy of Science U.S.S.R., Moscow.

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

ARIYEL', N.Z.; BYUTNER, E.K.

Methodology of determining the turbulence characteristics in jet streams. Meteor.i gidrol. no.11:33-36 N '62. (MIRA 15:12)

1. Glavnaya geofizicheskaya observatoriya.
(Atmospheric turbulence)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

ACCESSION NR: AT4028743 S/2531/63/000/144/0068/0075

AUTHOR: Byutner, E. K.

TITLE: On the calculation of structural and correlated functions on the final period of observations

SOURCE: Leningrad. Gl. geofiz. observ. i Ukr. n.-i. gidrometeorol. inst. Trudy*, no. 144/40, 1963. Fizika pogranichnogo sloya atmosfery* (physics of the atmospheric boundary layer); Dneprovskaya expeditsiya GGO i UkrNIGMI, 68-75

TOPIC TAGS: turbulence, atmosphere, correlated function, structural function

ABSTRACT: The author obtains an expression for the dispersion of structural and correlated functions calculated according to a single recording copy with a length of T. Numerical evaluations of the extent of this dispersion in the case of a system with a correlated function of the type $e^{-\alpha|\tau|}$ are conducted. The relative dispersion of the structural function $D_T(\tau)$ and the relative dispersion of the mean quadratic value of the function dependent on the averaging range of T are presented in graphs. By comparing the behavior of the errors, it follows that the calculation of the structural function according to a separate recording can be carried out for values of the arguments τ which do not exceed 0.1 T. In addition, the saturating value $D(\tau)$ which equals $2\sigma^2$ is obtained from the calculation of the mean values of

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

ACCESSION NR: AT4028743

$\overline{v^2}$ throughout the entire observation period T. The values of $D(\tau)$ in the case of intermediate values of the argument can be obtained only through extrapolation. It is apparent that a sufficiently large set of recordings, made under relatively identical external conditions, is required in order to reproduce more precisely the structural function, particularly in order to show its dependence on weather conditions. Orig. art. has: 3 figures and 23 formulas.

ASSOCIATION: Leningradskaya glavna geofizicheskaya observatoriya (Principle Geophysical Observatory of Leningrad)

SUBMITTED: 00 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: MM,AS NO REF SOV: 001 OTHER: 003

Card 2/2

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUTNER, E.K.; GISINA, F.A.

Effective coefficient of the capture of aerosol particles by rain and cloud drops. Trudy Len. gidromet. inst. no.15: 103-117 '63. (MIRA 17:1)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUTNER, E.K.; LAYKHTMAN, D.L.

Scattering of passive particles from a point source in a heterogeneous medium. Trudy Len. gidromet. inst. no.15:130-136 '63. (MIRA 17:1)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

ACCESSION NR: AT4028741 S/2531/63/000/144/0048/0058

AUTHOR: Ariyel', N. Z.; Byutner, E. K.; Panin, B. D.; Radikevich, V. M.

TITLE: Results of measuring the temperature and wind direction pulsations in the surface layer of the atmosphere

SOURCE: Leningrad. Gl. geofiz. observ. i Ukr. n.-i. gidrometeorol. inst. Trudy*, no. 144/40, 1963. Fizika pogranichnogo sloya atmosfery* (physics of the atmospheric boundary layer); Dneprovskaya expeditsiya GGO i UkrNIGMI, 48-58

TOPIC TAGS: temperature pulsation, wind direction, surface layer, temperature

ABSTRACT: A daily plot of the average hourly values of horizontal wind direction pulsations σ_α at an altitude of 16 m is produced. The dependence of the value of σ_α on stratification, the recurrence of various deviations from the average direction dependent on the stratification and the wind velocity, and the temperature pulsation values ΔT^2 with altitudes of 1 and 7 m are also obtained in the article. The corresponding spectral characteristics of the values σ_α and ΔT^2 are plotted in graphs. It is shown that the spectral function of the pulsation of wind direction is subject to the 5/3 law in the frequency range from 0.02 to 0.1 cycles at a wind velocity of approximately 4 m/sec. A diagram of the wind vane circuit is given,

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ACCESSION NR: AT4028741

together with the recorded examples of wind direction values and graph plots. From the graph it follows that the basic contribution to the oscillation energy responsible for the temperature pulsation at an altitude of 7 m is carried by the frequency ω of from 0.06 to 0.2 sec^{-1} and from 0.1 to 0.6 sec^{-1} at an altitude of 1 m (wind velocity in both cases was equal to 2.4 m/sec). Orig. art. has: 12 figures and 1 table.

ASSOCIATION: Leningradskaya glavna geofizicheskaya observatoriya (Principle Geophysical Observatory of Leningrad)

SUBMITTED: 00 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: AS NO REF SOV: 005 OTHER: 001

Card 2/2

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

ACCESSION NR: AT4028742 S/2531/63/000/144/0059/0067

AUTHOR: Ariyel', N. Z.; Byutner, E. K.; Konstantinov, A. R.

TITLE: Method and results of investigating spectral characteristics of turbulent pulsations in the surface layer of the atmosphere

SOURCE: Leningrad. Gl. geofiz. observ. i Ukr. n.-i. gidrometeorol. inst. Trudy*, no. 144/40, 1963. Fizika pogranichnogo sloya atmosfery* (physics of the atmospheric boundary layer); Dneprovskaya expeditsiya GGO i UkrNIGMI, 59-67

TOPIC TAGS: surface layer, spectral characteristic, turbulent pulsation, Dnieper expedition, Constantan alloy

ABSTRACT: In this paper, the authors present a method of spectral expansion of pulsation energy of weather elements in recording instantaneous values of the measured magnitude. Results of spectral analysis and module and pulsation wind velocity u are derived, together with the vertical component, the velocity w, the direction of the wind a, and the temperature T; these are presented in a series of separate records obtained in the Dnieper expedition (GGO) jointly with the UkrNIGMI. Two characteristics from which it is possible to obtain the spectral function W(ω) were calculated according to the experimental records of the pulsation values of the

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ACCESSION NR: AT4028742

measured magnitudes: 1) the structural function $D(\tau)$ and 2) the magnitude of the mean quadratic dispersion of the measured value $\sigma_2(t)$ dependent on the averaging time t. The experimental method is based on the use of the cooling intensity of a heated wire located in an air flow on the velocity and running angle of the flow in the wire. The cooling intensity dependence on the velocity is used for determining the value of the flow velocity; the cooling intensity dependence on the running angle is used for determining its vertical components. A Constantan wire with a diameter of 100 μ is used. The results of the experiment are presented in graphs. Orig. art. has: 8 figures and 6 formulas.

ASSOCIATION: Leningradskaya glavna geofizicheskaya observatoriya (Principle Geophysical Observatory of Leningrad)

SUBMITTED: 00 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: AS NO REF SOV: 004 OTHER: 003

Card 2/2

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

LAYKHTMAN, D.L.; BYUTNER, E.K.

Determination time of the stationary distribution of concentrations from a point source. Trudy Len. gidromet. inst. no.15: 97-102 '63. (MIRA 17:1)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

ARIYEL', N.Z.; BYUTNER, E.K.; PANIN, B.D.; RADIKEVICH, V.M.

Results of the temperature pulsation measurements and the wind direction in the lowest layer of the atmosphere. Trudy GGO no.144:48-58 '63. (MIRA 17:6)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUTNER, E.K.

Calculation of structural and correlation functions for a finite observation interval. Trudy GGO no.144:68-75 '63. (MIRA 17:6)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUTNER, E.K.; KRAMER, N.I.

Calculation of the horizontal scattering of particles from an immobile source according to data of meteorological measurements. Trudy GGO no.167:178-183 '65.

(MIRA 19:1)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

ACC NR: AT6021518 SOURCE CODE: UR/2531/66/000/187/0207/0216

AUTHOR: Byutner, E. K.

ORG: none

TITLE: Formulas for the determination of the turbulence coefficient from flow-structure data

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 187, 1966. Fizika pogranichnogo sloya atmosfery (Physics of the atmospheric boundary layer), 207-216

TOPIC TAGS: atmospheric turbulence, turbulence coefficient, turbulent transfer, atmospheric boundary layer, air pollution, surface boundary layer

ABSTRACT:
A review is made of the approximate formulas used to determine the turbulence coefficient k from data on fluctuations in turbulent flow k_u and k_T obtained from structural measurements. The physical model is based on the assumption that a volume of the atmosphere is horizontally homogeneous and that the turbulent flux of momentum and changes in concentration vary vertically only; the entire volume is divided into cells (moles) whose sizes are small compared with the distance in which fluctuations in u_i and T

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ACC NR: AT6021518

(velocity components and pollutant concentration) occur, but large in comparison with the molecular scale; the velocity field for u_i is characterized by a distribution function. The formulas reviewed for determining it include those of Hesselberg (1929), Lyapina (1948), Dubov (1959), and Ertel (1930). Their advantages and disadvantages are discussed. The error in determining k is computed as a function of the time interval involved in an experiment. A proposal is made that the results obtained by computing k with approximate formulas be compared with exact values for the surface boundary layer of the atmosphere in order properly to evaluate the various approximate formulas. / Orig. art. has: 1 table, 1 figure, and 21 formulas. [W.A. 50; CBE No. 10]

SUB CODE: 04/ SUBM DATE: none/ ORIG REF: 012/ OTH REF: 009

Card 2/2

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUTNER, K.G.

Use of D-163B steam generators on tank farms. Transp. i khran. nefti i nefteprod. no.6:29-30 '65. (MIRA 18:8)

1. Leningradskoye upravleniye Glavnogo upravleniya po transportu i snabzheniyu neft'yu i nefteproduktami pri Sovete Ministrov RSFSR.

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

GRINENKO, V.V.; BYUTNER, Ye.G.

Physiological incompatibility of grafting components in fruit trees. Bot.zhur. 50 no.10:1409-1418 O '65.

(MIRA 18:12)

1. Severo-Kavkazskiy zonal'nyy nauchno-issledovatel'skiy institut sadovodstva i vinogradarstva, Krasnodar.

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUYRIN, A.I.

Classification of slightly pitching ore deposits according to their thickness. Izv. AN Kazakh. SSR. Ser. gor. dela, met., stroi. i stroimat. no.2:22-27 '57. (MLRA 10:9)

(Ore deposits)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUYRIN, A.I.

BYUYRIN, A.I., Cand Tech Sci -- (diss) "Study of basic production processes in the working of low-grade deposits of Dzhezkazgan. Alma-Ata, 1958 16 pp with graphs. (Min of Higher Education USSR. Kazakh Mining-Metallurgic Inst). 120 copies (KL, 20-58-96)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUYRIN, A.I.

Ways of breaking ore in mining thin deposits in Dzhezkazgan.
Izv. AN Kazakh. SSR. Ser. gor. dela no.1:3-16 '58.
(MIRA 16:5)
(Dzhezkazgan District—Mining engineering)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUYRIN, A.I.

Investigating the process of scraper haulage when mining thin Dzhezkazgan deposits. Izv. AN Kazakh. SSR. Ser. gor dela no.2: 72-80 '58. (MIRA 12:10)
(Dzhezkazgan--Mine haulage)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

MUZGIN, S.S.; BYUYRIN, A.I.

Ore loading for trackless haulage in thin sections of the Dzhezkazgan deposit. Izv. AN Kazakh. SSR. Ser. gor. dela no.1: 90-96 '59. (MIRA 12:9)
(Dzhezkazgan--Ore handling)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUYRIN, A.I.

Determining certain parameters of blasting operations in mining thin Dzhezkazgan deposits. Trudy Inst. gor. dela AN Kazakh.SSR 4:80-87 '60. (MIRA 13:9)
(Dzhezkazgan--Mining engineering)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUYRIN, A.I.; DOROFEYEV, I.N.

Use of anchor bolting in horizontal workings at the Dzhezkazgan mines. Trudy Inst. gor. dela AN Kazakh. SSR 6:62-67 '60.
(MIRA 13:12)

(Dzhezkazgan region--Mine roof bolting)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUYRIN, A.I.; TSOY, S.

Some problems in the transfer of the Dzhezkazgan mines to a new mining procedure. Trudy Inst. gor. dela AN Kazakh. SSR 7:67-75 '60. (MIRA 14:6)
(Dzhezkazgan region--Mining engineering)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUYRIN, A.I.; MUZGIN, S.S.

Effect of oversized pieces of ore on the productivity of an excavator in underground mining. Trudy Inst.gor.dela AN Kazakh. SSR 8:87-91 '61. (MIRA 15:4)
(Excavating machinery)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUYRIN, A.I.; BAKAYEV, M.T.; URUMOV, T.M.; SALYKOV, K.; YESHPANOV, D.Ye.

Expediency of widening the panels in the Dzhezkazgan Mine.
Trudy Inst.gor.dela AN Kazakh.SSR 9:13-20 '62. (MIRA 15:8)
(Dzhezkazgan District--Mining engineering)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYUYRIN, A.I.

Ways of increasing labor productivity in operating Dzhezkazgan mines. Trudy Inst.gor.dela AN Kazakh.SSR 9:36-39 '62.
(MIRA 15:8)

(Dzhezkazgan District—Mining engineering—Labor productivity)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

LYSENKO, I.Z.; ZHUKOVICH, I.Ye.; BYUYRIN, A.I.

Ways of improving the chamber-and-pillar system of mining.
Trudy Inst. gor. dela AN Kazakh. SSR 19:3-8 '65.
(MIRA 18:12)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

8(5)

AUTHORS: Basharin, A. V., Professor, Doctor of Technical Sciences, Vinogradov, I. N., Candidate of Technical Sciences, Bychkov, A. I. Candidate of Technical Sciences, Byval'kevich, I. B., Engineer

SOV/105-58-11-12/28

TITLE: Motor-Generator Drive With Amplidyne and Magnetic Amplifier (Elektroprivod po sisteme generator-dvigatel' s elektromashinnym i magnitnym usilitelyami)

PERIODICAL: Elektrichestvo, 1958, Nr 11, pp 51 - 55 (USSR)

ABSTRACT: This is a description of an electric drive system developed at the kafedra elektrifikatsii promyshlennykh predpriyatiy Leningradskogo elektrotekhnicheskogo instituta imeni V.I.Ul'yanova (Lenina)(Chair of Electrification of Industrial Enterprises at the Leningrad Institute of Electrical Engineering imeni V.I.Ul'yanov (Lenin)) by order of the Uralmashzavod. The system is based upon a utilization of magnetic amplifiers and of symmetrical non-linear ceramic semiconductor resistances, which were developed under the supervision of N.P.Bogoroditskiy (Ref 4). The

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main problem was the creation of an automatically controlled electric drive system, the qualitative service factors of which are not below those of the power system (Ref 1), which, however, is capable of controlling starting, reversing and braking operation without contact elements. This paper includes an illustration of the circuit di gram of the electric drive. This system is capable of automatic and manual control. The system was tested with a sufficiently powerful model. The different modes of operation, starting, braking and reversing, are described. In order to compute the transients in this system a graphic method developed in the LETI (Ref 5) was used. The calculated and the experimental characteristic curves for the transient processes from motor starting to maximum speed showed a satisfactory agreement. The system is distinguished from others by good qualitative service factors and good static and dynamic characteristics. The circuit diagram is simple, it incorporates only a minimum of contacts and it

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guarantees a reliable braking without "creeping speeds". There are 8 figures and 5 Soviet references.

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut imeni V.I. Ul'yanova (Lenina) (Leningrad Institute of Electrical Engineering imeni V.I.Ul'yanov (Lenin)

SUBMITTED: May 29, 1958

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYVAL'KEVICH, Igor' Borisovich; BYCHKOV, Aleksandr Ivanovich; GOLOVANOV, Aleksandr Viktorovich; POL', Aleksey Yul'yevich; BASHARIN, A.V., doktor tekhn. nauk, prof., red.; YEVSEYEV, V.I., red.

[Theory of electric drives; manual for independent design work] Teoriia elektroprivoda; uchebnoe posobie k samostoiatel'nym raschetam. Leningrad, Leningr. elektrotekhn. in-t, 1964. 80 p. (MIRA 18:8)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

ALIYEV, Eduard Arkad'yevich; DYUKAREV, Yuriy Aksent'yevich; LATENKO, Boris Vasil'yevich; BYVAL'KO, I.G., doktor biol. nauk, red.; ONISHCHENKO, L.I., red.

[Soilless growing of vegetables in greenhouses] Vyrashchivanie ovoshchei v teplitsakh bez pochvy. Kiev, Gossel'khozizdat USSR, 1964. 141 p. (MIRA 17:6)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYVAL'TSEV, L.

Laying out the markings for dredging purposes on the terrain with the help of a sextant. Rech. transp. 22 no.10:59 O '63. (MIRA 16:12)

1. Nachal'nik ruslovoy izyskatel'skoy partii No.4 Kamskogo basseynovogo upravleniya puti.

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

USSR/General and Special Zoology. Insects P-2

Abs Jour : Ref Zhur - Biol., No 13, 1958, No 60954

Author : Bryukhin B.V.
Inst : -
Title : Biological and Extermination Measures Against the Silkworm Moth

Orig Pub : Sb. robot po issl. khl-vu. L-L., Sel'khozizdat, 1957, 66-68

Abstract : The unpaired silkworm moth spreads rapidly during the caterpillar stage, has very extended periods of mass reproduction, and is only slightly affected by parasites. Its principal egg parasite --- Anastatus disparus --- in 1951 infected an average of 1.9%, and in 1953 1.3%, of its eggs. Since it deposits its eggs in hollows and other closed places where oil does not penetrate, it is necessary to develop, and utilize the egg-eaters. To accomplish this a large number of egg

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Abs Jour : Ref Zhur - Biol., No 15, 1953, No 68934

deposits are collected in the autumn; in January they are placed in a warming chamber for 15-20 days. The hatching caterpillars are destroyed while the egg-deposits are preserved with the caterpillars until spring when they are released in the centers of infection of the silkworm moth. The creation of mixed plantations with undergrowth helps increase the number of tachina flies and ichneumon flies which attack the caterpillars after the 2nd-4th shedding. The parasites of the Ferdinandeophaga larvae and Pseudoferdinandeophaga affinis pupae are highly effective. Against the Lackey moth, Polenomus laeviusculus has proved to be effective, attacking 75% of its eggs. -- A.P. Andrianov

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DOBROVOL'SKIY, D.S., kand.tekhn.nauk; BYVSHEV, A.V., inzh.; LEVIN, B.D., inzh.

Pulp grinding with the help of acoustic media. Bum. prom. 36 no.9: 26-27 S '61. (MIRA 15:1)

(Papermaking machinery)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

DOBROVOL'SKIY, D.S.; BYVSHEV, A.V.

Pulp grinding by means of a generator of sonic vibrations. Bum.prom. [38] no.7:3-5 Jl '63. (MIRA 16:8)

1. Sibirskiy tekhnologicheskiy institut.
(Woodpulp industry--Equipment and supplies)
(Sound waves--Industrial applications)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

BYVSHEV, B.V., inzh.

New model of the flash "candlemeter." Svetotekhnika 4 no.6:14-16 Je '58. (MIRA 11:6)
(Photometry)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

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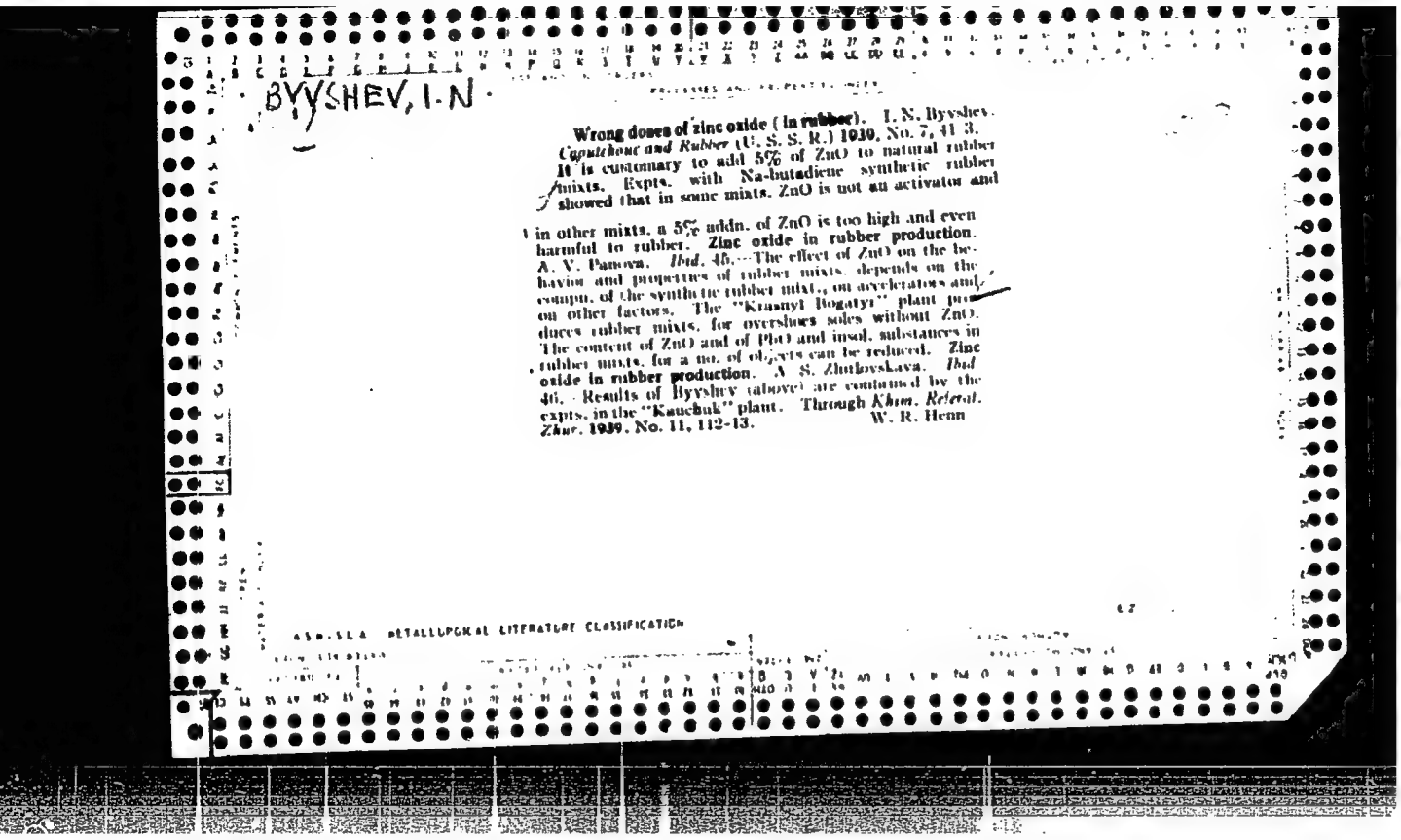

BYYSHEV, I.N.

Wrong doses of zinc oxide (in rubber). I. N. Byyshev. *Caoutchouc and Rubber* (U. S. S. R.) **1939**, No. 7, 41-3. It is customary to add 5% of ZnO to natural rubber mixts. Expts. with Na-butadiene synthetic rubber showed that in some mixts. ZnO is not an activator and in other mixts. a 5% addn. of ZnO is too high and even harmful to rubber. **Zinc oxide in rubber production.** A. V. Panova. *Ibid.* 45.—The effect of ZnO on the behavior and properties of rubber mixts. depends on the compn. of the synthetic rubber mixt., on accelerators and on other factors. The "Krasnyi Bogatyr" plant produces rubber mixts. for overshoes soles without ZnO. The content of ZnO and of PbO and insol. substances in rubber mixts. for a no. of objects can be reduced. **Zinc oxide in rubber production.** A. S. Zhurbovskaya. *Ibid.* 46. Results of Byyshev (above) are confirmed by the expts. in the "Kauchuk" plant. Through *Khim. Referat. Zhur.* **1939**, No. 11, 112-13.
W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4"

"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307930005-4

A Conference on the Use of Steam-Gas Installations with High-Head Steam Generators

stations using the steam-gas cycle; Operating experience with "Velox" boilers operating on gas; The significance of steam-gas installations in increasing the effective application of gas-fuel power technology; The use of steam-gas installations with free-piston engine gas-generators in municipal power engineering; The energy characteristics and comparative efficiency of condensing steam-gas power stations. There were also communications on the state and prospective development and application of gas-turbines in power engineering, on their design and manufacture at the Leningrad Metal Works and on the development of the steam-gas cycle using steam-gas generators with direct introduction of water into the combustion chamber. Doctor of Technical Sciences A.N.Lozhkin and Candidate of Technical Sciences M.I.Korneyev reported on the steam-gas installation with combustion at constant pressure and a high-head steam generator, developed by the Central Boiler Turbine Institute, the schematic circuit diagram of which is given

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in Fig 1. A considerable number of advantages over ordinary steam turbine power installations are claimed: the efficiency is higher and the fuel consumption is about 12% less than in a condensing station with medium steam conditions. When a heat and electric power station operates on the steam-gas cycle, the output of electric power is increased by 100 to 200 kW hour/Mkcal as compared with steam turbine heat and electric power stations. Relevant curves are seen in Fig 2. A cross-sectional drawing of a high-head steam generator is given in Fig 3 with brief description. The inertia of these steam generators is low and they can change load quickly. The circuit diagram of a high-head steam generator with reheat is shown in Fig 4. The Central Boiler Turbine Institute has worked out technical data for the production of high-head steam generators. They have outputs of 25 to 210 tons/hr for units of 6 to 200 MW at standard initial steam conditions. The amount

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of metal required is 25 to 30% less than in a normal steam turbine installation of the same output, as will be seen from the data in Table 1. Engineer A.S.Gurilenok reported that the Kiyev Division of Promenergoproyekt has worked out a project for steam-gas power installations with high-head steam generators for a newly-constructed oil refinery. It will operate according to the thermal loading and be connected to the electric power system. Refinery gas will be used as fuel. As indicated in Table 2, four variants were worked out to determine the most economic type of power installation. The results are discussed and it is shown that the steam-gas cycle provides considerably more electric power in relation to the thermal loading and costs less per installed kilowatt. Engineer B.V.Rudomino reported that in considering the reconstruction of a power station it was found that the steam-gas cycle offered considerable advantages over the steam cycle. Particulars are given in Table 3. The equipment of the steam-gas cycle chosen

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is described. In future, sets in heat and electric power stations with steam-gas installations will need turbines without tappings for regenerative heating of feed-water. Candidate of Technical Sciences M.P.Chuvilkin of the Academy of Communal Economy of the RSFSR, reached a similar conclusion about turbine tappings. Candidate of Technical Sciences, M.I.Korneyev reported about the operation of the high-head "Velox" steam generator made by Brown Boveri and installed in a Soviet power station. Various modifications are suggested to overcome a number of defects that have been discovered in practice. The report by Candidate of Technical Sciences M.L.Zaks and Engineer A.V.Stolyarov considered the combined circuit of a condensing power station with steam and gas turbines when heating the feed-water by steam from tappings, by fuel or by air from the exhaust gases. The procedure for comparing thermal efficiency of steam-gas, gas turbine and steam-turbine installations was described. (See also Teploenergetika, 1959, Nr 4.)

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Candidate of Technical Sciences L.A.Kasavin reported on the use of steam-gas installations with free-piston engines in communal power engineering. The effectiveness of district heating is increased and makes it possible to build communal steam-gas district-heating stations on smaller areas in the centre of the heat loads. The use of free-piston engines as gas generators in conjunction with gas-turbines is discussed. Candidate of Technical Sciences N.I.Sazonov reported that it is more economic to use gas in a heat and electric power station with steam-gas installations than to burn it in the furnaces of a condensing station and comparative figures are given Doctor of Technical Sciences V.V.Uvarov noted that gas-turbine construction has reached a level at which it is possible to build machines of 50 and 100 MW in one set. It was decided to call a special conference of the scientific-technical commission of the Council of Ministers of the USSR to examine the prospects of developing gas turbine manufacture in the Soviet Union and of using gas-turbines in power engineering. Engineer L.D.Frenkel'

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stated that the Leningrad Metal works has now developed a gas-turbine of 12 MW which, if ordered, can be delivered in 1961. The main characteristics are given. The conference concluded that extensive use of gas and liquid fuel in power engineering will make it possible to use a number of different high-efficiency types of power installation. The conference recommended the construction of heat and electric power stations with high-head steam-gas generators in towns, using gas for fuel. The building of large condensing stations operating on natural and refinery gas was also recommended. The conference requested GOSPLAN of the USSR to organise the production of the high-head steam generators and other equipment. It was concluded that the steam-gas cycle developed by the Central Boiler Turbine Institute has a considerable number of advantages. The relationships between the efficiency and the type and output of installations consuming natural gas is given in Table 4.

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Free-piston engines may be used in small communal power installations but because of their small unit output they cannot compete with steam-turbine power installations. Research work should be organised to develop more economic cycles for power installations burning liquid and gas fuel. There are 6 figures and 4 tables.

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1. Gosudarstvennyy komitet Soveta Ministrov SSSR po koordinatsii nauchno-issledovatel'skikh rabot.
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